

**SMALL FUNCTIONAL UNITS OF ANTIBODY  
HEAVY CHAIN VARIABLE REGIONS**

**ABSTRACT**

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The present invention relates to small antibody-derived recognition units for experimental, medical, and drug design purposes. A single-domain VH phage-displayed library that is based on a natural framework scaffold of a mouse monoclonal antibody with a unique VH/VL interface and a randomized CDR3 was generated. This library was displayed

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without any mutations or modifications in the original interface framework residues. The library was used to select phage clones that bind specifically to protein antigens with affinity in the nanomolar range. The VH domains were subsequently produced as soluble proteins at very high yields by expressing them in *E. Coli* as insoluble inclusion bodies and in-vitro refolding. These small functional modules of antibodies were termed

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"Microbodies" and were fully characterized by means of biochemical and biophysical properties as well as binding properties to several antigens of interest.